Point of Use & Point of Entry Treatment Device Policy

Kansas Department of Health and Environment
Bureau of Water, Public Water Supply
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PURPOSE AND BACKGROUND

Point of Use (POU) or Point of Entry (POE) treatment may be an option for public water supply systems (PWSSs) where centralized treatment is not economically feasible. This policy document is intended to assist PWSSs and their engineering consultants in evaluating POU/POE treatment as an alternative to more traditional centralized treatment. As is the case in all facets of public water supply, the health and safety of the ultimate consumers of publicly supplied water is paramount, and thus is the focus of this document.

Prior to selecting POU/POE treatment as the treatment to be implemented, a public water supply system must first thoroughly evaluate more traditional options such as centralized treatment, development of an alternate source of water, or interconnection with another public water supply system and determine that none of these options are feasible. If those options are not economically feasible, POU or POE treatment may be the answer.

POU and POE treatment units rely on many of the same treatment technologies that are utilized in centralized treatment facilities. Centralized treatment facilities treat all source water to produce drinking water meeting state and federal drinking water regulations prior to being delivered to the distribution system for a variety of uses; human consumption in particular. POU/POE treatment units are typically located after a customer's service connection and treat water exclusively for the structure where they are located. The units treat only a portion of that water in order to target specific health-based contaminants. Potential cost savings realized are derived through the use of a POU or POE treatment unit to treat only that portion of the customer's water that is to be consumed. However, in considering treatment options, it is important PWSSs realize there is a significantly greater potential for a customer to consume water which exceeds the limits for regulated contaminants than customers of centralized treatment systems. Consumption of water that exceeds regulated contaminant levels subjects those customers to possible adverse health effects.

DEFINITIONS

Point of use treatment unit (POU) means a treatment unit applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap.

Point of entry treatment unit (POE) means a treatment unit applied to the drinking water entering a structure, a house or building for example, for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.

Performance indicating device (PID) means a device integral to the treatment unit which in some fashion, e.g., visually, audibly, etc., indicates whether or not the treatment unit is meeting the treatment objective(s).

Automatic shut-off device (ASD) means a device integral to the treatment unit which automatically shuts off the treatment unit if the treatment unit fails to meet the treatment objective(s).

The Safe Drinking Water Act (SDWA) means the main federal law that ensures the quality of drinking water in the United States. Under the SDWA, the United States Environmental Protection Agency (USEPA) sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.

OWNERSHIP

All POU and POE treatment units must be owned or leased by the PWSS. Where a POU or POE treatment unit is already in use, the existing treatment unit must be removed from service, relocated, or the treatment unit transferred to the express control of the PWSS.

LEGAL AUTHORITY

The PWSS must have the necessary legal authority for the right of entry to public or private property to install, maintain, service and sample the POU/POE as a condition of continued water service to the property. A copy of the legal document which authorizes such authority must be provided to KDHE. The PWSS may contract with a qualified third party for these services; however, the PWSS ultimately retains all responsibility for the treatment units. The PWSS may not contract with the resident, user and/or property owner to provide these services.

PARTICIPATION

The PWSS must have 100% participation from all customers with regard to the installation of POU and/or POE treatment units at each service connection. Provisions to accommodate a treatment unit must be made where a connection exists but is not active so that a treatment unit may be readily installed prior to the activation of the connection. The same requirements would apply where new connections are made to existing as well as newly constructed water lines.

DESIGN

A POU or POE treatment unit must have sufficient contaminant reduction capacity to continuously reduce the concentrations of the contaminants of concern below their respective MCLs (or SMCLs). Based on the anticipated ranges of concentrations in the water piped to the

treatment units, those units must have safety factors that are adequately protective of human health in drinking water applications.

KDHE will not consider POUs for microbial contaminants, VOC's, or contaminants at risk through inhalation or absorbed through contact with the skin. The SDWA prohibits the use of POU/POE treatment units for addressing microbial concerns.

The POU or POE treatment unit must have a performance indicating device and/or automatic shut off device integral to the treatment unit. The performance indicating device must be set with a safety factor to alert the customer before exceeding the designated treatment objective(s). The automatic shut-off device must shut off the treatment unit when the treatment unit no longer meets the treatment objective(s).

Treatment units must be certified by an American National Standards Institute (ANSI) accredited third party certifier under one of the NSF International (NSF)/ANSI water treatment unit standards. NSF International, Water Quality Association (WQA), and Underwriters Laboratory (UL) are three organizations currently recognized by ANSI as being ANSI approved third party certifiers for various drinking water related certifications.

NSF/ANSI standards currently recognized as pertaining to POU/POE treatment units for the applications previously noted are:

NSF/ANSI Standard 42: Drinking Water Treatment Units – Aesthetic Effects

NSF/ANSI Standard 44: Cation Exchange Water Softeners

NSF/ANSI Standard 53: Drinking Water Treatment Units – Health Effects

NSF/ANSI Standard 58: Reverse Osmosis Drinking Water Treatment Systems

NSF/ANSI Standard 62: Drinking Water Distillation Systems

Treatment units meeting the preceding certifications must also include the performance indicating device as well as the automatic shut-off device, if an automatic shut-off device is also provided.

Disposal of waste streams generated by POU or POE treatment units must first be reviewed by KDHE prior to proceeding with the review/approval of the treatment unit themselves. If wastes are discharged to an onsite septic tank, local and county authorities must be contacted and their approval granted prior to the installation of the waste disposal system. An air gap is the preferred method to isolate a treatment unit from the infrastructure receiving the unit's waste stream.

Pilot testing may be necessary, particularly for those treatment units that generate waste streams. A pilot test is the best way to both confirm unit performance and determine important information pertaining to waste stream quantity and water quality.

All connections to a public water supply system must have at least one POU or POE treatment unit installed. If the building contains water dispensing fixtures commonly used for consumptive purposes such as ice makers and refrigerator water dispensers, KDHE may require that such fixtures be supplied with treated water from a POU or POE treatment unit. The PWSS must inspect all installations to prevent cross connections with non-potable water sources, and ensure compliance with the local backflow prevention, cross-connection control program.

The PWSS must provide both centralized disinfection and maintain a residual disinfectant regardless of the use of POU and/or POE treatment units.

Some POU or POE treatment units may remove fluoride. Therefore if the public water supply system practices or plans to practice fluoridation they should give consideration as to how a fluoridation program will be affected by the installation of POU or POE treatment units.

When POU or POE treatment unit maintenance, e.g, membrane or media replacement, is scheduled based on totalized flow, a flow meter showing totalized flow shall be part of the installation for each POU or POE treatment unit.

INSTALLATION

Installation of the POU or POE treatment unit must be completed by a qualified, trained installer such as a PWSS system operator or the manufacturer's representative. The completed installation must meet all local codes and permit requirements, and be inspected by the local code enforcement officer prior to being placed into operation. The PWSS cannot delegate installation to the resident, user and/or property owner

WARRANTY

Treatment units must be warranted by the vendor against all defects in materials and workmanship for a period of at least one year. Reduction of contaminants of concern to levels less than their respective MCLs (or SMCLs) must also be warranted by the vendor for a period of at least one year.

MONITORING AND COMPLIANCE

Before installation, the PWSS must have a KDHE approved plan for monitoring and sampling, and it must be incorporated into an operations and maintenance program for the POU/POE treatment units to be installed. All samples collected as part of monitoring must be analyzed by a Kansas certified laboratory. The sampling schedule shall be staggered on a rotating basis such that approximately the same number of units will be sampled each year. However, if this approach to sampling results in less than one third of the treatment units being sampled each year then one third of the treatment units will be sample each year. The treatment units are to be visually inspected each time a sample is collected. Adjustments to the sampling schedule may be necessary; therefore, in order to protect public health, KDHE reserves the right to adjust the sampling schedule as it deems necessary.

Each customer whose treatment unit exceeds an MCL (or SMCL) must be notified in writing of any such exceedance for each contaminant for each of their treatment units. The notification must also state the PWSS's corrective action plan. A copy of each of the customers' notice is to be provided to KDHE within 10 days of the PWSS having notified the customer. Exceeding an MCL (or SMCL) in the effluent of any treatment unit will be cause for immediate follow up by the PWSS in coordination with KDHE. Additionally, a summary of the number of times an MCL (or SMCL) was exceeded and an explanation of the corrective actions taken during the year must be summarized in the public water supply system's annual consumer confidence report.

Special attention shall be paid to the results of the analysis of samples showing contaminant levels in excess of the level(s) set to trigger the treatment unit's performance indicating device. If 10 percent of the performance indicating devices fail to appropriately indicate reaching the set point, then the PWSS will have 30 days to provide to KDHE both a written explanation as to the reason or reasons why such a large number of units failed and a corrective action plan. The customer of each treatment unit which experienced a performance indicating device failure will also be similarly notified. Additionally, the PWSS must include in their annual consumer confidence report a summary which at a minimum includes the total number of such failures and the actions taken to address the failures.

A request to utilize one or more surrogate water quality parameters in place of directly monitoring contaminants of concern may be considered by KDHE if such a request is accompanied by data from pilot testing which supports the validity of such an approach to monitoring. In such cases, split samples for the purpose of verification will be required on an on-going basis with the number of such samples to be determined on a case by case basis.

MAINTENANCE

Additional treatment units and/or an adequate supply of spare parts must be kept on hand by the PWSS or by the contractor hired by the PWSS to make repairs to and/or replace the POU/POE treatment units. Repairs to or replacement of treatment units to ensure continued compliance with the targeted treatment objectives must be completed within 48 hours. The PWSS must provide the necessary personnel to ensure that the treatment units are satisfactorily repaired or replaced within this time frame. Additionally, the PWSS must also provide bottled water to the affected customer until the treatment unit has been properly repaired or completely replaced.

As previously noted, POU/POE treatment units are to be visually inspected any time a sample is collected or a site visit conducted. Additionally, the PWSS is to maintain a record of the inspections and visits, and make them available for review to KDHE upon request.

PUBLIC EDUCATION AND NOTIFICATION

Prior to their installation, the PWSS's customers must be provided with educational materials which explain the reasons for the installation of the treatment units, associated necessity for their continued maintenance and periodic monitoring, and be made aware of the performance

indicating device and how to interpret its various states as well as how it interacts with the automatic shut-off device when such a device is also included by the manufacturer.

The PWSS must provide ongoing educational materials to current customers while new customers must receive the same or the most recent versions of the educational materials at the time the treatment units are placed into service. The educational materials must convey to the customer that their drinking water contains elevated levels of the contaminants of concern, summarize the potential health effects of drinking water containing levels of those particular contaminants of concern, and instruct the customer to only drink water treated by the POU/POE treatment units installed by their PWSS. The educational material must also instruct the customer on how to interpret the performance indicating device's various states and how it interacts with the automatic shut-off device when such a device is also included by the manufacturer.

If a POU is used in a building that is accessible to the public, e.g., schools, businesses, public buildings, etc., then the PWSS must continuously post notices at all taps not supplied with water treated by a POU that state the water provided at the tap is untreated and contains elevated levels of the contaminants of concern. Additionally, the notices must also explain the potential health effects of drinking water containing the elevated levels of contaminants of concern. Such postings are not required in private residences.

RECORD KEEPING AND REPORTING

All records must be retained for a period of 10 years and consist of sampling, non-compliance, flow and total flow where available, and maintenance activities that would at a minimum include repairs and replacements.

Reports are to refer to a specific treatment unit and be completed during the useful life of that specific treatment unit. These reports must track installation, maintenance, non-compliance, corrective actions, replacement, the duration of a treatment unit's out-of-service status and whether or not bottled water was provided to the customer while the treatment unit was out of service, and the duration of time during which bottle water was provided to the customer while the treatment unit was out of service.

The PWSS must on an annual basis submit to KDHE for its review a summary report by January 31st for the prior year for each year the PWSS utilizes POU and/or POE treatment units as previously described. The summary report shall at a minimum include the following:

1. Summary of sampling locations (map, list, etc.);

2. Copies of analytical results for samples collected including split samples;

3. Summary of flows and totalized flows;

4. Summary of maintenance activities to include the condition of each treatment unit and activities pertaining to the verification of the treatment unit's performance indicating devices; and

5. Copies of reports pertaining to any treatment unit that was taken out of service and the duration of time that bottled water was provided to the affected customer while their treatment unit was out of service.